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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/730,864	12/08/2003	Mark M. Leather	7057-0045/010027S	3528

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EXAMINER

TUNG, KEE M

ART UNIT	PAPER NUMBER
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2676

DATE MAILED: 10/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/730,864

Applicant(s)

LEATHER, MARK M.

Examiner

Kee M Tung

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-46 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21, 26-37 and 42-46 is/are rejected.
- 7) ☒ Claim(s) 22-25 and 38-41 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. Claims 9, 20 and 36 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As per claims 9, 20, and 36, the symbol " 2^n " is not defined and is not well known in the art. The examiner is interpolated the " 2^n " as "2 to the power of n".

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

3. Claims 1, 7-10, 15, 18-20, 26, 31, 34-36 and 42 are rejected under 35 U.S.C. 102(e) as being anticipated by Zhu et al (6,323,860 hereinafter "Zhu").

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As per claim 1, Zhu teaches a rasterizer interpolator (Fig. 5A) comprising a setup unit (binning engine 240) for calculating pixel coverage of a graphical primitive against one or more tiles; a plurality of graphics pipelines (255a-255p), wherein each pipeline is dedicated to one of a plurality of portions of an output screen with said setup unit distributing instructions to said pipelines, each pipeline further comprises a rasterizer (255A-255P) configured to receive said primitive determined to result in the generation of covered pixels in tiles in a screen region dedicated to said pipeline, and perform one or more graphics processing operation on said tiles (col. 13, lines 9-35). Therefore, at least claim 1 is anticipated by Zhu.

As per claims 7 and 8, Zhu teaches the size of tiles is configurable and the width and height of said tiles are the same (col. 2, lines 42-46).

As per claim 9, Zhu teaches the number of said plurality of screen portions is 2^n (col. 2, lines 37-46).

Claims 15 and 18-20 are similar in scope to claims 1 and 7-9, and thus are rejected under similar rationale.

As per claims 10, 26 and 42, Zhu teaches said ownership of said tiles is assigned to said pipelines in a non-contiguous manner (col. 13, lines 9-13).

Claims 31 and 34-36 are similar in scope to claims 1 and 7-9, and thus are rejected under similar rationale.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 2-6, 16, 17, 21, 32, 33 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhu et al (6,323,860 hereinafter "Zhu") in view of Larson (6,636,232).

The teachings of Zhu are given in previous paragraph of this Office action. However, Zhu fails to explicitly teach said rasterizer further includes a scan converter and a Hierarchical_Z unit configured to perform a coarse grain tiling process on said tiles. This is what Larson teaches (Fig. 2, scan converter 206, col. 3, lines 41-52 and performing visibility comparison, Z-buffering col. 4, lines 44-54 and col. 4, line 66 to col. 5, line 2). Larson further teaches a computer graphics system (Fig. 2) comprising a host CPU (202), a graphics subsystem (Fig. 3) includes a front end (204); a texture mapper (208), a tile builder (210) and the rasterizer comprising setup block (302) received vertex data for primitives. It would have been obvious to one of ordinary skill in the art at the time the present invention was made to combine the teachings of scan converter of Larson into the system of Zhu because Larson suggest scan converter and rasterization are interchangeable (col. 3, line 43) and the scan converter is considered one of the rasterization feature. Therefore, at least claim 2 would have been obvious.

As per claim 3, Larson teaches said scan converter computes a list of tiles in said pipeline covered by said graphics primitives (col. 4, line 1 to col. 5, line 32).

As per claim 4, Larson teaches said Hierarchical-Z unit works in conjunction with the data from said scan converter to computer a list of visible tiles in said pipeline

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covered by said graphics primitive (Z-buffer and col. 4, lines 44-54 and col. 4, line 66 to col. 5, line 2).

As per claim 5, Larson teaches said setup unit uses polygon vertex data in said primitive to calculate pixel coverage (Fig. 3, col. 4, lines 1-12).

As per claim 6, Larson teaches said calculation performed by said setup unit dynamically takes into account different configurations of said plurality of graphics pipelines (col. 4, line 1 to col. 5, line 2).

Claims 16, 17 and 21 are similar in scope to claims 5, 6 and 2, respectively, and thus are rejected under similar rationale.

Claims 32, 33 and 37 are similar in scope to claims 5, 6 and 2, respectively, and thus are rejected under similar rationale.

6. Claims 11-14, 27-30 and 43-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhu et al (6,323,860 hereinafter "Zhu").

The teachings of Zhu are given in previous paragraph of this Office action. However, Zhu fails to explicitly teach said rasterizer interpolator comprising a plurality of graphics chips. It would have been obvious to one of ordinary skill in the art at the time the present invention was made to implement the teachings of rendering pipeline (255A – 255P) of Zhu as claimed plurality of chips in order to provide the flexibility by easily increase or decrease the number of rendering pipeline chips without burden. Therefore, at least claim 11 would have been obvious.

As per claim 12, Zhu teaches said setup unit performs super tiling in distributing said tiles to said plurality of graphics chip (col. 2, lines 37-46).

As per claim 13, Zhu teaches said graphics processing operations includes coarse grain tiling (obvious by the teachings of tiling of Zhu).

As per claim 14, Zhu teaches a cache in each of said graphics chips configured to store said tiles (obvious in view of the binning memory 251A – 251P).

Claims 27-30 are similar in scope to claims 11-14, and thus are rejected under similar rationale.

Claims 43-46 are similar in scope to claims 11-14, and thus are rejected under similar rationale.

Allowable Subject Matter

7. Claims 22-25 and 38-41 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The following is a statement of reasons for the indication of allowable subject matter: The prior art made of record fails to anticipate or make obvious the claimed invention. Specifically, the prior art fails to teach, generating a first mask value, ..., generating a sub-list containing smaller quad tiles within said intermediate tiles and computing a second mask value, ..., as recited in claims 22 and 38.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kee M Tung whose telephone number is 703-305-9660. The examiner can normally be reached on Tuesday - Friday from 5:30 am - 4:00 pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Bella can be reached on 703-308-6829. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Kee M Tung
Primary Examiner
Art Unit 2676